ABSTRACT OF THE DISCLOSURE

[0086] Systems and methods are provided for designing and producing custom-fit prosthesis. According to one embodiment, a mold is produced from which a custom-fit implant may be directly manufactured. Medical image data representing surrounding portions of a patient's anatomy to be repaired by surgical implantation of the custom-fit implant are received. Then, three-dimensional surface reconstruction is performed based on the medical image data. Next, the custom-fit implant is designed based on the three-dimensional surface reconstruction and a two-part mold is created with a void in the shape of the custom-fit implant by subtracting a representation of the custom-fit implant from a representation of a mold. Finally, the two-part mold is output from which the custom-fit implant may be directly manufactured.

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